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Fig. 1

[illegible]

Fig. 2a

[illegible]

Fig. 2b



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HS-HMC-Dis3	183	AIQEGIPAF	TC	EEYVKT	LT	----	ANPELIDRL	ACLSEEGNE	IES	----	GKII	FSEHLP	LSKL
MM-hmc-Dis3	183	AVQEGIPAF	TC	EEYVKS	LT	----	ANPELIDRL	AYLSDEMNE	IES	----	GKII	FSEHLP	LSKL
CE-Q17632-Dis3	191	HYQH	----	VMYLKEYI	QNL	EDP	----	GKQALLDQ	MAAYESSG	NGNE	----	KQIFDEY	LSHDRI
SP-P37202-Dis3	199	AAEQGIQV	STLKD	VYVQY	LP	----	DSEILLDM	VSAIADAI	ASKEQ	VES	----	GTKNVYEL	HWSMSRL
SC-Q08162-Dis3	207	EVESNIIT	KSLVQY	IELLP	----	NADDIRDS	IP-QMDS	FDKDL	ERDT	----	FSDFTF	PEYY	STARV
MM-LOBO	107	GDLVVV	KLLP	EDQW	KAVK	P	----	E	----	SNDKEI	EATYEAD	IPE	----
HS-LOBO	0	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
CE-Q09568-LOBO	92	GDVVAV	KIKP	KEDW	LVN	YV	----	E	----	YVKW	WAEH	----	----
SP-Z99259	143	NSAK	----	REKNNS	HQ	VEAD	T	----	NN	----	ATEMVSS	NAKKS	----
SC-P24276-SSD1	280	PQQQLS	PFRR	HG	SN	SRD	YNS	FNT	LE	PPA	IFQQGH	KHRAS	NSSVH
SC-P39112	206	NRVLLR	IP	PHK	L	PAGI	HSLI	----	----	Q	PESH	HKHL	P
		-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
	281	-----	-----	291	-----	301	-----	311	-----	321	-----	331	-----
		-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	341
HS-HMC-Dis3	237	QQGIKSG	TYLQ	GTFR	AS	RE	N	Y	LE	ATV	WI	H	G
MM-hmc-Dis3	237	QQGIKSG	SYLQ	GTFR	AS	RE	N	Y	LE	ATV	WI	H	G
CE-Q17632-Dis3	242	MEG	I	AS	G	T	I	K	R	G	N	F	S
SP-P37202-Dis3	257	LACI	K	N	G	E	V	H	K	G	L	I	N
SC-Q08162-Dis3	264	MGGL	K	N	G	V	L	Y	Q	G	N	I	Q
		-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

Fig. 2c



Fig. 2d

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340	HS-HMC-Dis3	-----PTGRVVGIIKRNWR-PYC-----	501	511	521	531	541	551
340	MM-hmc-Dis3	-----PTGRVVGIIKRNWR-PYC-----						
349	CE-Q17632-Dis3	-----STAKVVGIIKRNWR-EYC-----						
358	SP-P37202-Dis3	-----PTAKVVGILKRNWR-PYV-----						
387	SC-Q08162-Dis3	-----PTAKVVYIQRSSWR-QYV-----						
244	MM-LOBO	-----ATGILKLLADKNSD-LFK-----						
0	HS-LOBO	-----AAGKLQLPNSAN-----						
179	CE-Q09568-LOBO	-----TRARVVAIEKRAEISKIV-----						
292	SP-Z99259	SLSPSTKSGVRRSSLKQRPTQKNDDVEVEGQSLLLVEEEEINDKYKPLYAGHVAVLDRIPGQLFSGT						
488	SC-P24276-SSD1	-----TALLSPISVTIIPKSOHLYYAQV-----						
365	SC-P39112	----- ----- ----- ----- ----- ----- ----- -----	491	501	511	521	531	541
357	HS-HMC-Dis3	-----GMLSKS--DIKE-----SRRHLFTPADKRIPRIRIETROASKLEG-----RRIIVAIDGW						
357	MM-hmc-Dis3	-----GMLSKS--DIKE-----SRRHLFTPADNRIPRIEIRQASALEG-----RRIIVAIDGW						
366	CE-Q17632-Dis3	-----GMLLPS--TVKG-----ARRHLFCPAERLIPIRIETEQAETLSQ-----QRIVVAIDHW						
375	SP-P37202-Dis3	-----GHVDNA--TIAQSKGS--QQTVLLTPMDRRVPKIRFTRQAPRLVG-----RRIVVAIDLW						
404	SC-Q08162-Dis3	-----GQLAPS--SVDP-QSSS--TQNVFVILMDKCLPKVRIITRRRAAELLD-----KRIVISIDSW						
261	MM-LOBO	-----KYALFS--PSDH-----RVPRIYVPLKDCPQDFMTRPKDFANTL-----FICRIIDW						
0	HS-LOBO	-----PNVLFV--ATDS-----RVPRIILPKSDVDKEFFSRPKDFERFL-----YTAKITDW						
192	CE-Q09568-LOBO	-----GILRAPGWSLKNVEYVSKSSYAFIPKDKRLPFTIHKNDLSDLGENWIENILKHHDDQLFSVEITRW						
310	SP-Z99259	LGLLRPSQQANSNDNKPQSPKIAWFKPTDKKVPLIAIPTELAPKDFVEN-----ADKYSEKLFVASIKRW						
558	SC-P24276-SSD1	IEKLEAN--SYREVNKFVKLVNERKYRDISALYPSVIQLLKDFAAGN-----FHNNGIIVA						
389	SC-P39112	----- ----- ----- ----- ----- ----- ----- -----	561	571	581	591	601	611
		-----	561	571	581	591	601	621

Fig. 2e



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HS-HMC-Dis3	522	-----SARRGTTVYLCEKRIDMVPPELLSS--NLCSLKCDVDRDLAFSCIWEMNHNA-----EILK
MM-hmc-Dis3	522	-----SARRGTTVYLCEKRIDMVPPELLSS--NLCSLRSNVDRLAFSCIWEMNHNA-----EILK
CE-Q17632-Dis3	534	-----AALRGTTVYLCDDRRLDMLPCLLSS--NLCSLRGEEERYAFSCIWTMTSSA-----DIQS
SP-P37202-Dis3	551	-----AASRGTTVYLVDKRIDMLPMLLGT--DLCSLRPYVERFAFSCIWEMDENA-----NLIK
SC-Q08162-Dis3	586	-----GAARGTSVYLVDKRIDMLPMLLGT--DLCSLKPYPVDRFAFSCIWELDDSA-----NIVN
MM-LOBO	424	-----AAERATSVYLVQKVVPMLPRLLCE--ELCSLNPMTDKLTFFSVIWKLTPEG-----KILE
HS-LOBO	51	-----AAERATSVYLVQKVVPMLPRLLCE--ELCSLNPMSDKLTFFSVIWTLTPEG-----KILD

Fig. 2g



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CE-Q09568-LOBO	363	-----ASERGNSTYLSQTVIPMLPRILCE--QLCSLNPVGVDRLSFSTVFKMSYEA-----ELYD	771	781	791	801	811	821	831
SP-Z99259	496	-----AASRATTVYLQKAIPMLPPLLCE--RLCSLNPVNVERLAFSVFWKLDNSGK-----EIGK							
SC-P24276-SSD1	746	-----ARKRSSAVFMPQKLVNLLPQSFN--DELSLAPGKESATLSVVVYTLDSSTL-----RIKS							
SC-P39112	578	GISTDILNVALKRSFTTYLPDTPVVPMLPQSI CHLSDLGKQGQRTKTSFSVDVKITSKCSGKSIEMYS							
		----- ----- ----- ----- ----- ----- ----- -----							
		771	781	791	801	811	821	831	
HS-HMC-Dis3	574	TKFTKSVINSKASL-YAEAQLRIDSANMND-----DITTSRLRGLNKLAKILKKRRIENGA							
MM-hmc-Dis3	574	TRFTKSVINSKASL-YAEAQMRIDSAAMND-----DITTSRLRGLNQLAKILKKGRIEKGA							
CE-Q17632-Dis3	586	VKYHKSLIKSKAALTYEKAQEIIDDPKEQN-----DVALGLRGLMKLSKVLNARRRTGNGA							
SP-P37202-Dis3	603	VHFTKSVIASKEAFSYADAQAARIDDKMQD-----PLTQGMRVLLKLSKILKQKRMDEGA							
SC-Q08162-Dis3	638	VNFMKSVIRSREAFSFEQAQLRIDDKTQND-----ELTMGMRALLLKLSVKLKQKRLEAGA							
MM-LOBO	476	EWFGRTIIRSC TKLSYDHAQSMIENPTEKIPPEELPPISPEHSVEEVHQAVLNHLSIAKQLRRQRFVDGA							
HS-LOBO	103	EWFGRTIIRSC TKLSYEHAQSMIESPTTEKIPAKELPPISPEHSSEEVHQAVLNHLSIAKQLRRQRFVDGA							
CE-Q09568-LOBO	415	VWFGRSVIRSRVKLAYEHAQDFIENPEKDFTCDELDPDISDGNTPFEIKEKTLMLHRIAQVLRQKREDSCGA							
SP-Z99259	549	RWFGKTVIKTCARLAYSEAQQGVIEGKSWDDAVG--KPIGGTHTPKDVETSI LTLCEISRKLKDRFAKGA							
SC-P24276-SSD1	798	TWVGESTISPSNLSLEQLDEKLSGSPS-----YLSVQEIARSFYARRINDPE							
SC-P39112	648	FKIRKGIVSNFPKATYEDVDRI LGTPNSEAS-----PVKKDLESLSMISKLLREQRIKNSN							
		----- ----- ----- ----- ----- ----- ----- -----							
		841	851	861	871	881	891	901	

Fig. 2h



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HS-HMC-Dis3	628	LTLSSPEVRFHMDSETHDPI	DLQTKELRETNSMV	EEFMLLANISVAKKI	HEEFSEHALLRKHP	APPPSNY
MM-hmc-Dis3	628	LTLSSPEIRFHMDSETHDPI	DLQTKELRETNSMV	EEFMLLANISVAKKI	HEEFSEHALLRKHP	APPPSNY
CE-Q17632-Dis3	641	LTLASSEVRFDMDWESRTP	PKKVMKQHLDT	THSMVEEFMLLANISVAKKI	EEYPCALRRRHP	VPLKESY
SP-P37202-Dis3	658	LNLASPEVRIQTDNETSD	PMDEIKQLLETNSL	VEEFMLLANISVAKKI	YDAFPQTAVLRRHAA	PPLTNF
SC-Q08162-Dis3	693	LNLASPEVKVHMDSETSD	PNNEVEIKKLLATNSL	VEEFMLLANISVAKKI	YDAFPQTAMLRHAA	APPSN
MM-LOBO	546	LRLDQLKLAF	TLDHETGLPQGC	HIYERDSNKLVEEF	MLLANMAVAHKI	FRFFPEQALLRRHPPQTKML
HS-LOBO	173	LRLDQLKLAF	TLDHETGLPQGC	HIYERDSNKLVEEF	MLLANMAVAHKI	FRFFPEQALLRRHPPQTKML
CE-Q09568-LOBO	485	LRIELPRLKFALDEK	-KPQGVSIYEIK	DSNKLVEEFMLLANME	VAKKIAENFPEHALLRNHPP	PPKEKMI
SP-Z99259	617	VEINSTEKLFQ	LDDEYGMNPKCE	VEYEQTDANHLIEEF	MLLANRSVAEHISKNFS	NNSLRRHASPKKQI
SC-P24276-SSD1	849	ATLLPTLSLLESLD	DEKVKVDNLDR	TGLGFVINEIKR	KVNSTVAEKIYTKL	GLDLALLRRMQPIATKM
SC-P39112	704	AVIFGEGFNKGLV	MLN---	ADSEGELTEVTFSD	QEETLSTILVSEMM	LANTLTGRYFAEN-----KI
	911	921	931	941	951	961 971
HS-HMC-Dis3	698	EILVKAARS-RNLEIK	TDATAKSLAESLD	QAESPFPYLN--	TLLRILATRCMMQ	AVYFCSGMD----
MM-hmc-Dis3	698	DILVKAARS-KNLQIK	TDATAKSLADSL	DRAESDPFPYLN--	TLLRILATRCMMQ	AVYFCSGMD----
CE-Q17632-Dis3	711	KPLVEAARH-RGFEI	IVESGKGLADSL	NRCDKKNPMLN--	RLRLMLTTRCMTQ	AVYFSAKGDGFS
SP-P37202-Dis3	728	DSLQDILRVCKGMHL	KCDTSKSLAKSL	DECDPKPEYFN--	TLLRILTTRCML	SAEYFSCGTFAP----
SC-Q08162-Dis3	763	EILNEMLNTRKNMS	ISLESSKALADSL	DRCDPKPEYFN--	TLVRIMSTRCMM	AAQYFYSGAYS-----
MM-LOBO	616	SDLVEFC	DQ-MGLPMDVSS	AGALNKSLTKTF	GGDDKYSLARKEV	LTNMYSRPMQMALYFC
HS-LOBO	243	SDLVEFC	DQ-MGLPMDVSS	AGALNKSLTKTF	GGDDKYSLARKEV	LTNMYSRPMQMALYFC
CE-Q09568-LOBO	554	KDVAEQCAR-IGFPL	DGRTSGLLSTSL	RKYQKSRDLMCIR	QVSSLTIKPMQ	QAKYFCT--FEM----
SP-Z99259	686	NEFCHFLKS-MNFDF	DASSAFAFNAS	MVRLRSTFNEELV--	ELFENMAVRS	LNRAEYFCTGDFGEK----
SC-P24276-SSD1	919	ASFRKKION-FGYN	FDNTADELIK	GVLKIKDDVVRGI	-----EIL	EKTMPRARYFIAGKVD----
SC-P39112	764	GGVFR	CYKQ---LPLGE	VAAQQYD	SMITSTKKGIFPKL	-----DIVKLSS
	981	991	1001	1011	1021	1031 1041

Fig. 2i

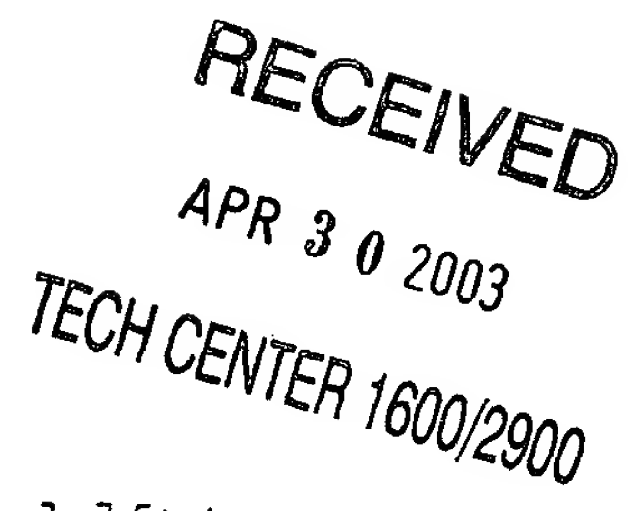


Fig. 2j

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HS-HMC-Dis3	835	QLFFKSKG-----IVSEEAYILFVRKNAIVVLI	PKYGLEGT	VFFEEKDKPNPQLI-----	
MM-hmc-Dis3	835	QLFFKSKG-----IVSEEAYILFVRKNAIVVLI	PKYGLEGT	VFFEEKDKPKPRLA-----	
CE-Q17632-Dis3	918	VRYFKGK-----VETCEGFVMGVRNNGIQVF	VPKYGLES	IVLQTSAAAG--TT-----	
SP-P37202-Dis3	868	GQALKGG-----VAEEDAYVIKVFKN	GFVVF	IARFGLGIVYTKSLSSVLEPN-----	
SC-Q08162-Dis3	903	GQVMRNN-----ESTETGVVIKVFNN	GI	VVLPKFGVEGLIRLDNLT--EDPNS-----	
MM-LOBO	756	AVLVKESG-----PLESEAMVMGVLNQ	AFDVL	VLRFVGVQKRIYCNALALRSYSFQ-----	
HS-LOBO	383	AVLVKESG-----PLESEAMVMGILKQ	AFDVL	VLRYGVQKRIYCNALALRSHHFQ-----	
CE-Q09568-LOBO	693	GVFIHQTG-----PMKCQAVVLG	VMDLS	FDVLI	VEYGVVVKRVYVDKMKR-----DFN-----

Fig. 2k



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SP-Z99259	823	SVYLA EYCKKHDKKMPVQAFATRISGNSIDVYISEYGISNRVDLSSDDR-IKSFI	1191	1201	1211	1221	1231	1241	1251
SC-P24276-SSD1	1052	CKTINDMGNTTG--QLLTMATVLQVYESSEFDVFIPEFGIEKRVHGDQLPLIKA EFDGTNRVLELHWQPGV							
SC-P39112	890	LNVLKKL--TKLEPERTFDVMVT--SVPQNGFTGCVFPDLSFARGTLK							
		----- ----- ----- ----- ----- ----- ----- -----							
		1191	1201	1211	1221	1231	1241	1251	
HS-HMC-Dis3	885	-----YDDEIPSLKIED-TVFHVFDDKVKVKIMLDSSNLQHQQKIRMSLVEPQIPGIS							
MM-hmc-Dis3	885	-----YDDEIPSLRIEG-TVFHVFDDKVKVKITLDSSNLQHQQKIRMALVEPQIPGIN							
CE-Q17632-Dis3	965	-----IDVEEMSVKNGDVVVIKELEPVTVRISVNEKNQQRPRVELQLIKPAIPGLS							
SP-P37202-Dis3	916	-----VEYVEDEYKLN--EIRDQPKPQT--VQIQMFQQQVRVRVTTVRDEHSGKQ							
SC-Q08162-Dis3	950	-----AAFDEVEYKLT--VPTNSDKPR--DVYVFDKVEVQVRSVMDPITSKR							
MM-LOBO	806	-----KVGKKPELTLVWEPD-DLE--EPTQQVITIFSLVDVVLQAEATALKYSA							
HS-LOBO	433	-----KVGKKPELTLVWEPD-DME--QEPQQVITIFSLVEVVLQAEATALKYSA							
CE-Q09568-LOBO	740	-----KSTK--LTYWPADPNNAESGNREFFSSSIQMCNVVYVIL-VPYKSIEVSA							
SP-Z99259	878	-----VAPDDSSVKITL--FDDS--Q-K--TIALTDRFQVYLYSDYSRTFFSI							
SC-P24276-SSD1	1120	DSATFIPADEKNPKSYRNSIKNFRSTAAEIANIELDKAESEPLISDPLSKELSDLHLTVPNLRLPSAS							
SC-P39112	934	-----LHPSSMHYPMIG-----DIVKNCKISKIDCLEGMLELEKL-							
		----- ----- ----- ----- ----- ----- ----- -----							
		1261	1271	1281	1291	1301	1311	1321	

Fig. 21



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HS-HMC-Dis3	935	IPDTS	-----NMDLNGPKKKMKLGK-----	1331	1341	1351	1361	1371	1381
MM-hmc-Dis3	935	IPPNVA	-----DKALTAPGGKKRLEK-----						
CE-Q17632-Dis3	1016	V-----	DFDLSSEG-----LGL-----						
SP-P37202-Dis3	962	K-----V-----	QITLVY-----						
SC-Q08162-Dis3	994	K-----A-----	ELLLK-----						
MM-LOBO	853	ILKRPG	-----LEKASDEEPED-----						
HS-LOBO	480	ILKRPGTQGHLCPEKEEESDGEPEDSSTS	-----						
CE-Q09568-LOBO	788	TIVRPS	-----LEQRNILKSTLKDMMKETGSTILO-----						
SP-Z99259	919	R-----	CSLVSLN-----						
SC-P24276-SSD1	1190	DNKQNALEKFISTTETRIENDNYIQEIHELQKIPILLRAEVMALPCLTVRALNPPMKRV	-----						
			-----	1331	1341	1351	1361	1371	1381

Fig. 2m



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LOBO mouse

Wildtype mouse

Human

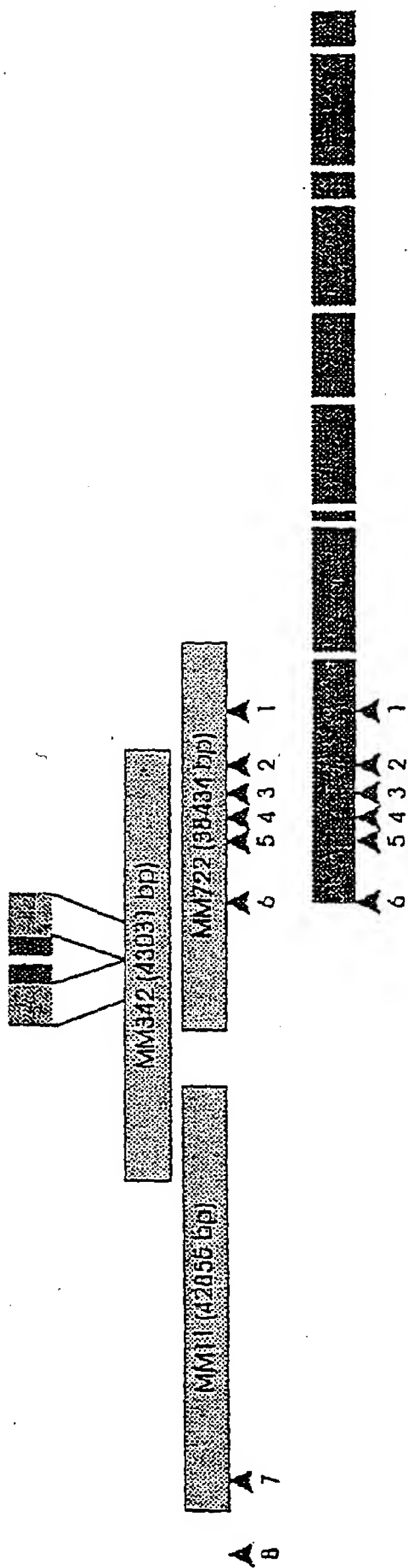


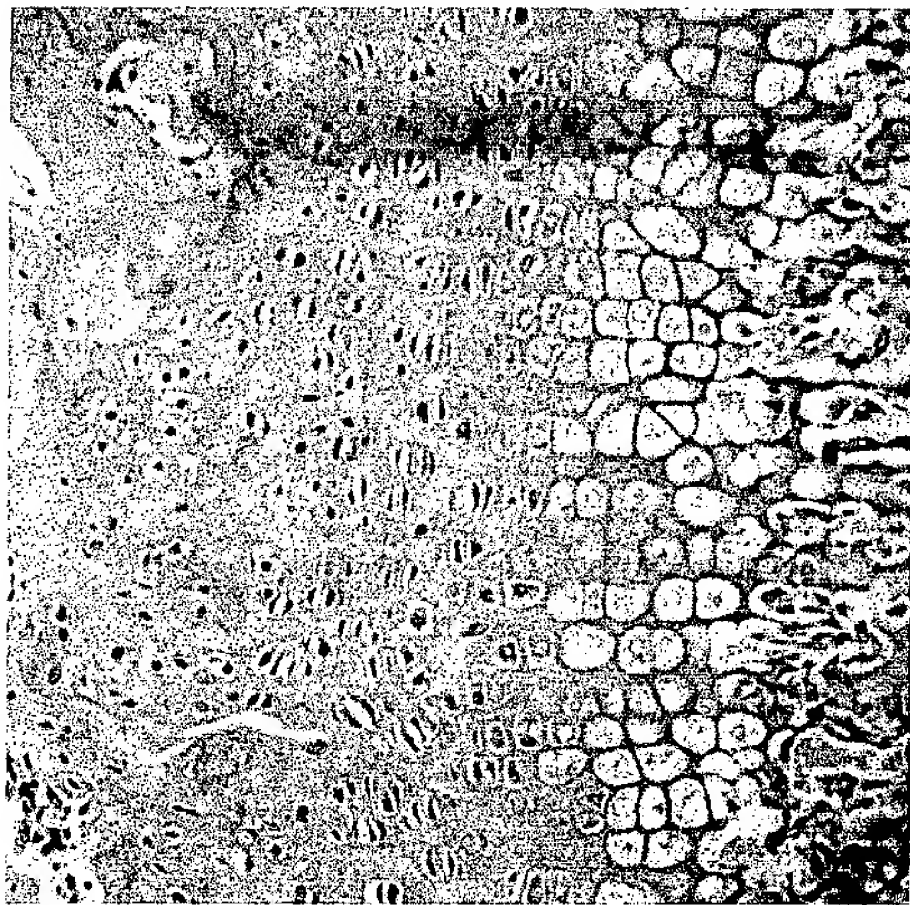
Fig. 3

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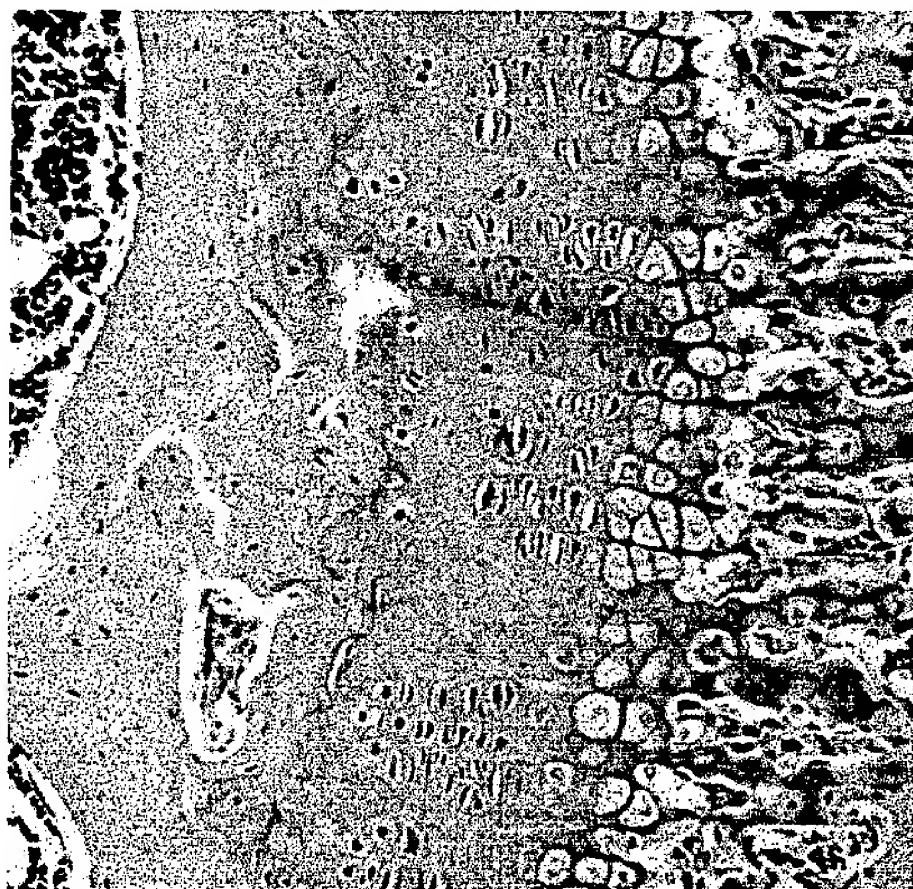
LOBO



Proliferative
Zone

Hypertrophe
Chondrozyten

WT



Proliferative
Zone

Hypertrophe
Chondrozyten

Fig. 4



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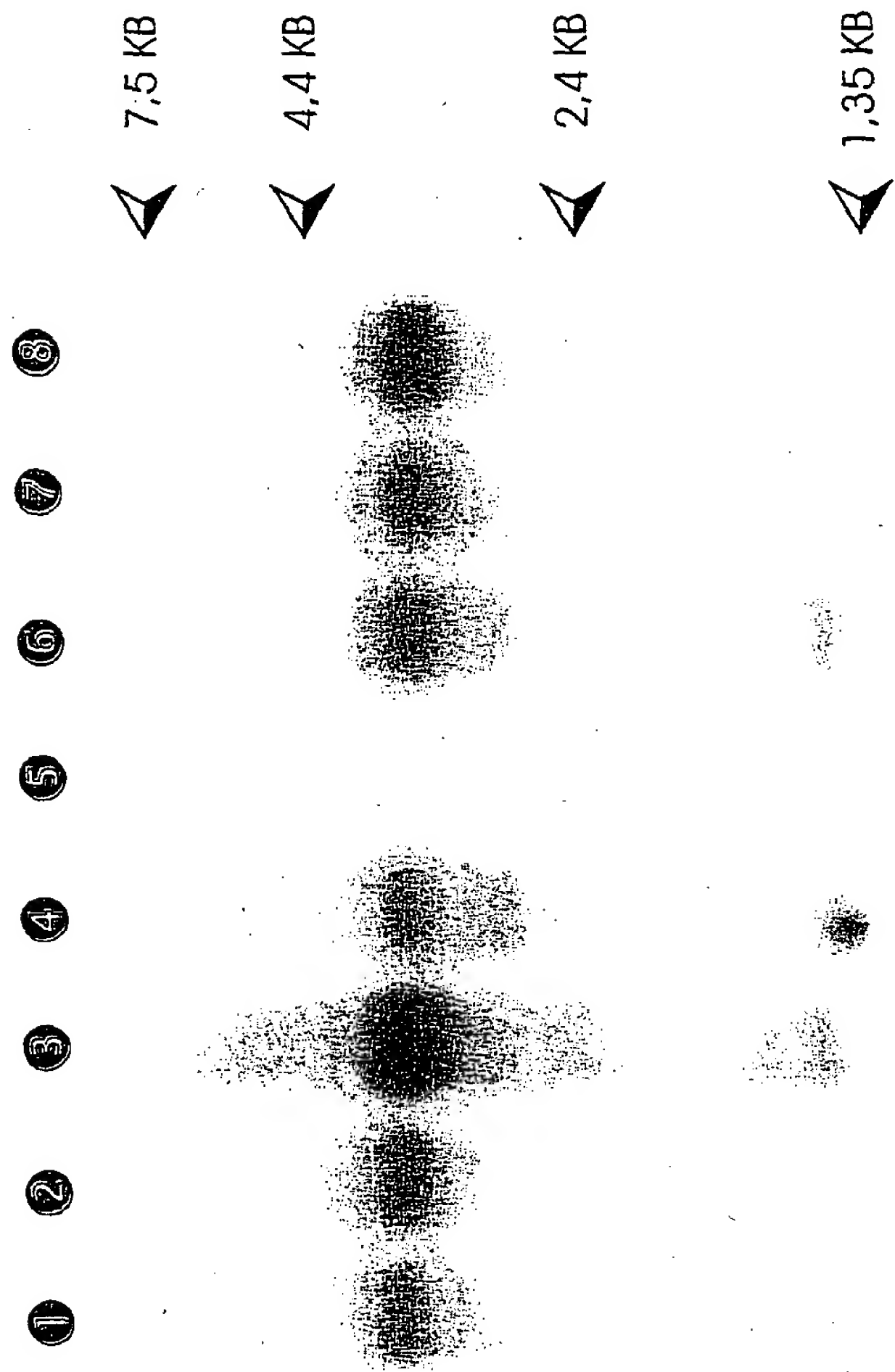


Fig. 5



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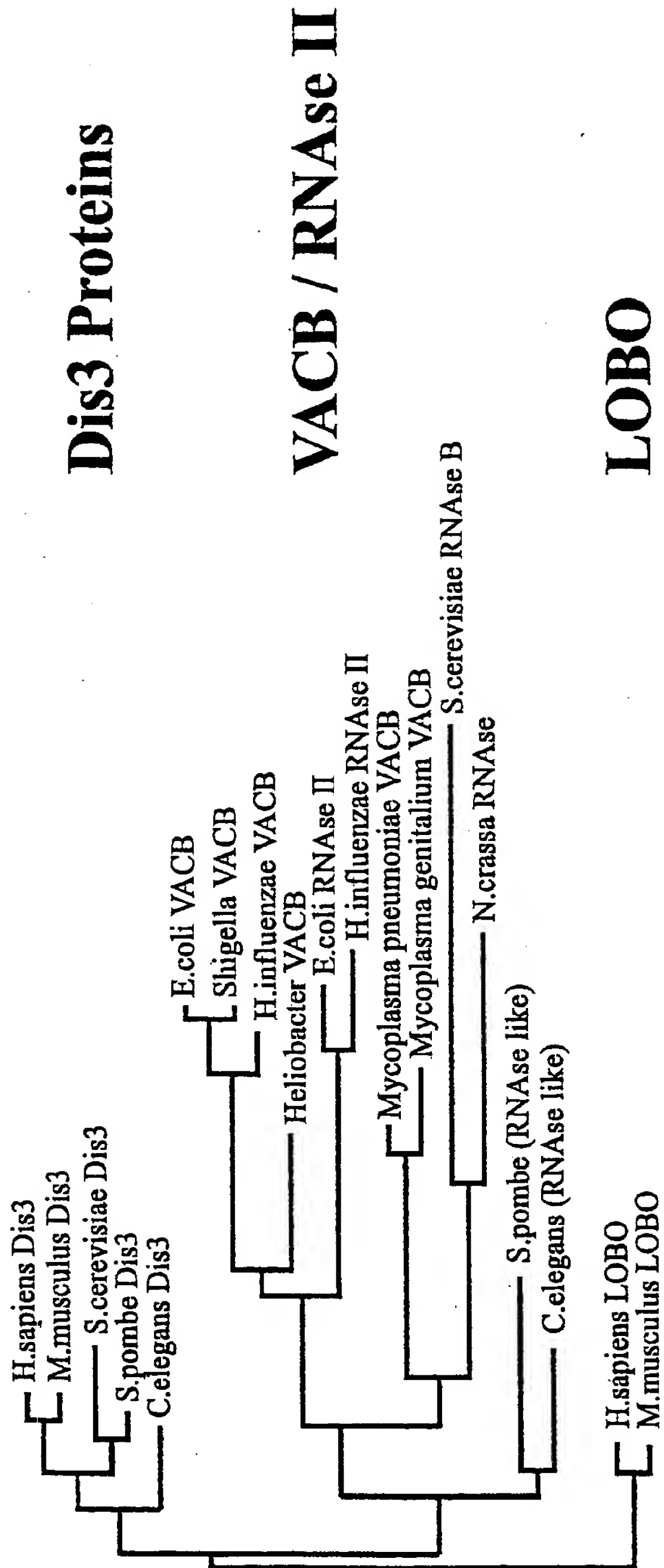


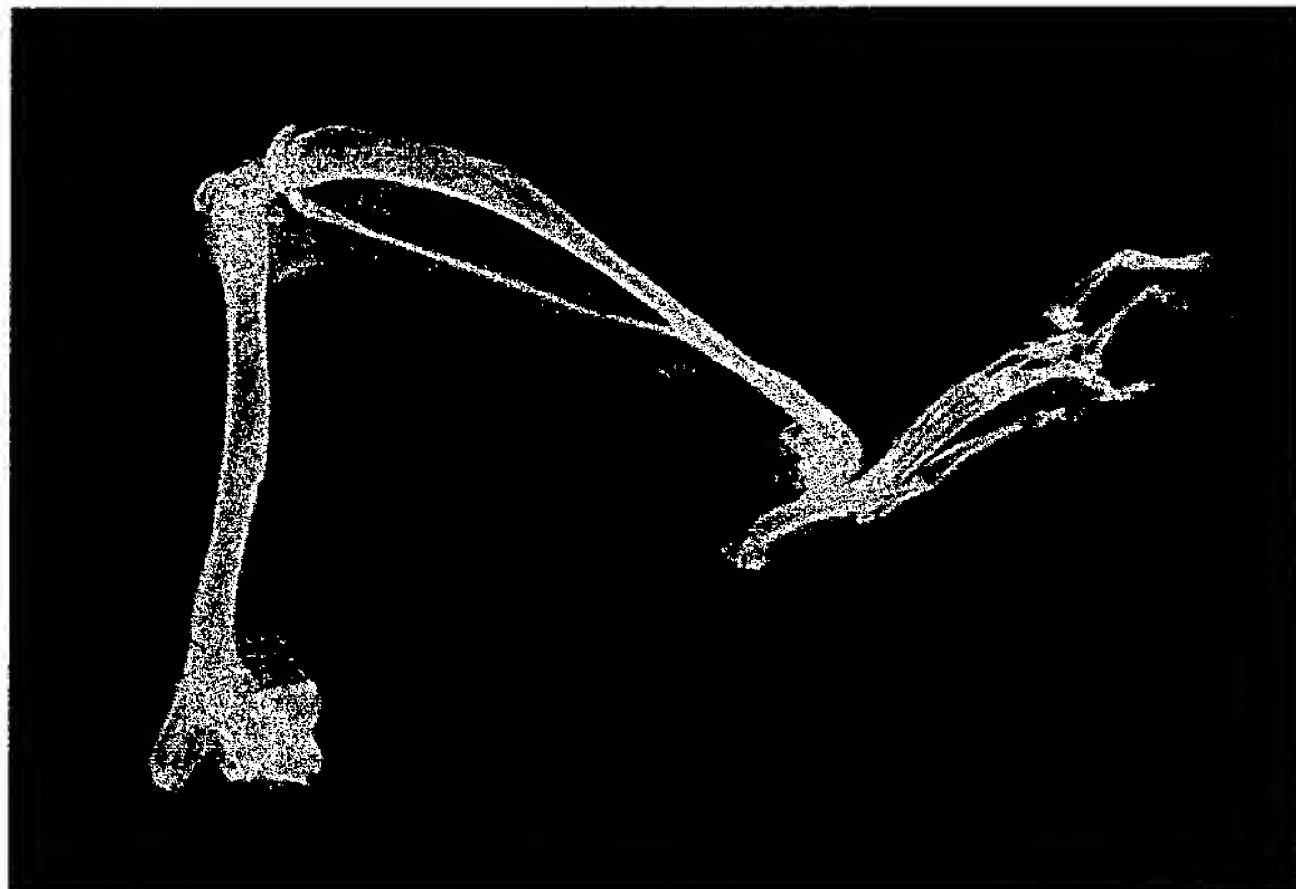
Fig. 6

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LOBO



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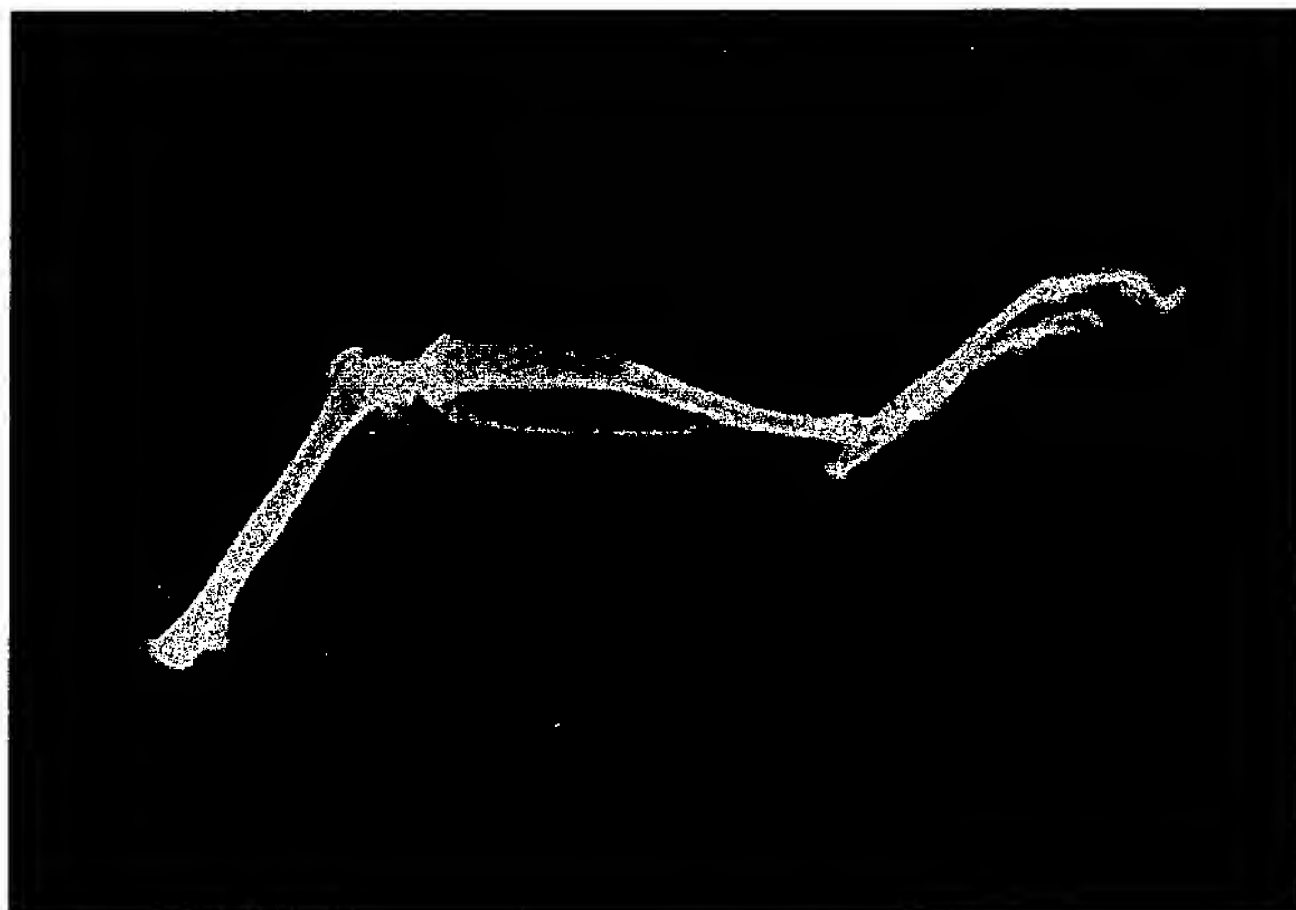


Fig. 7

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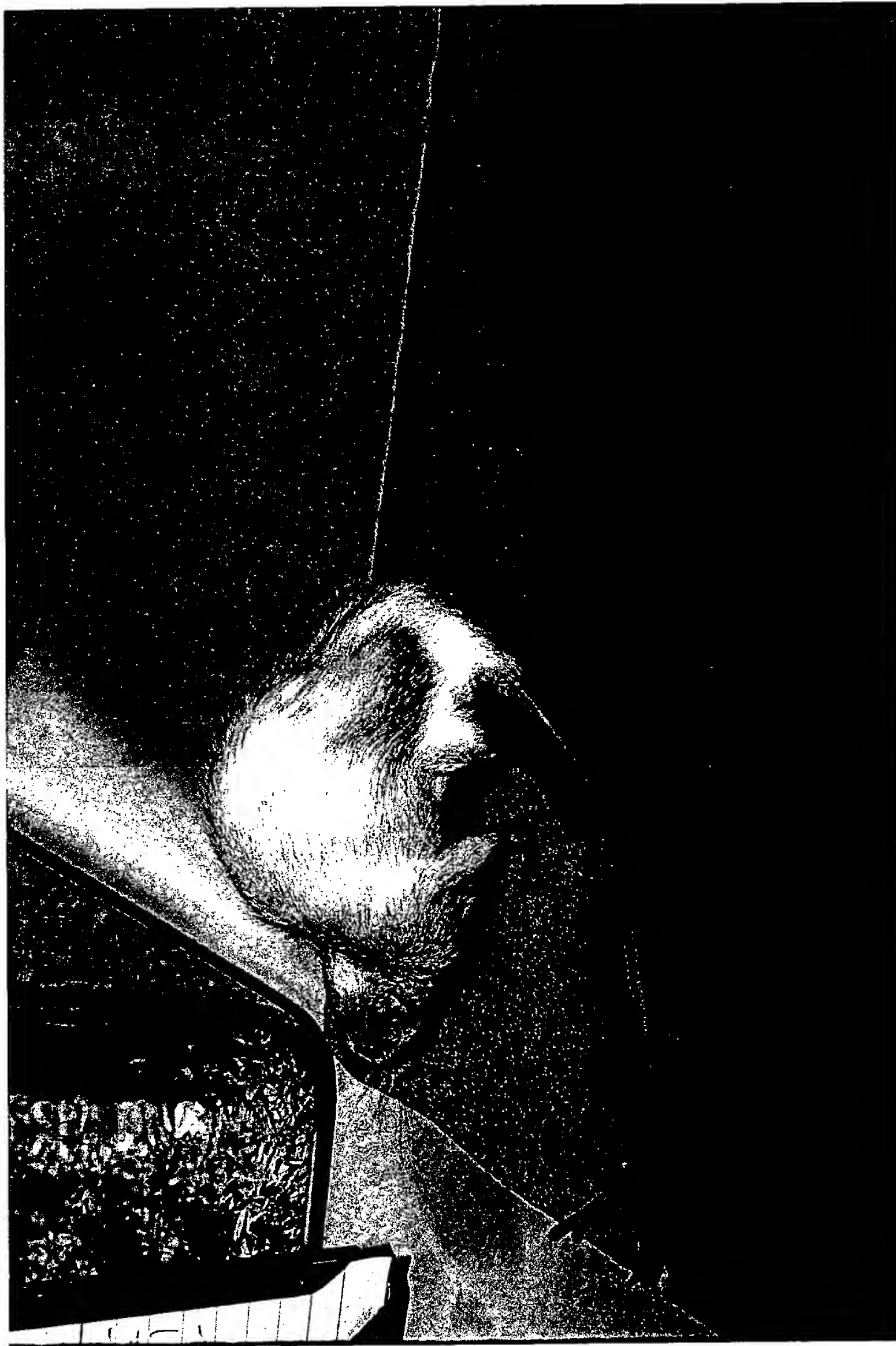


Fig. 8



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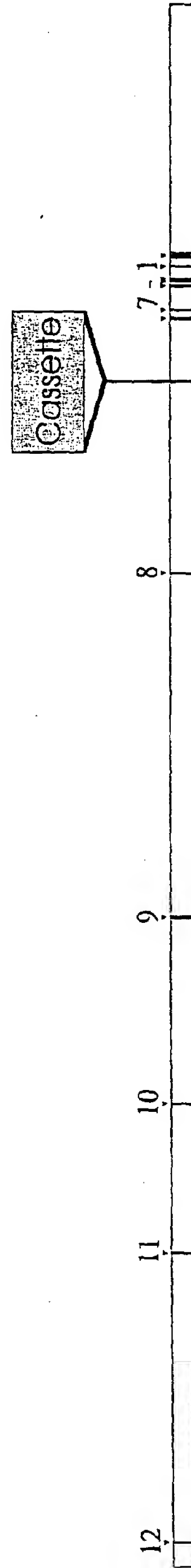
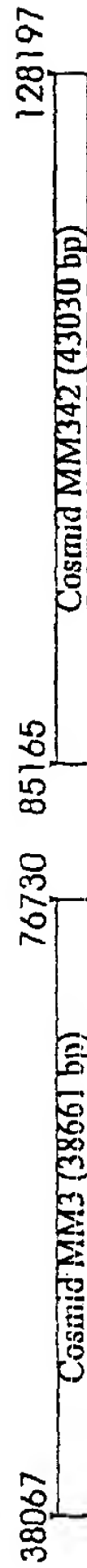
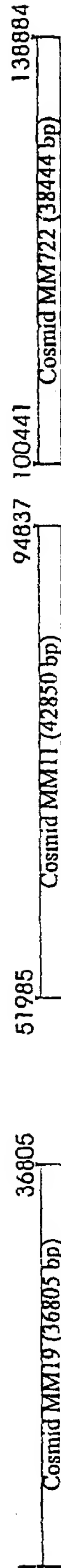


Fig. 9



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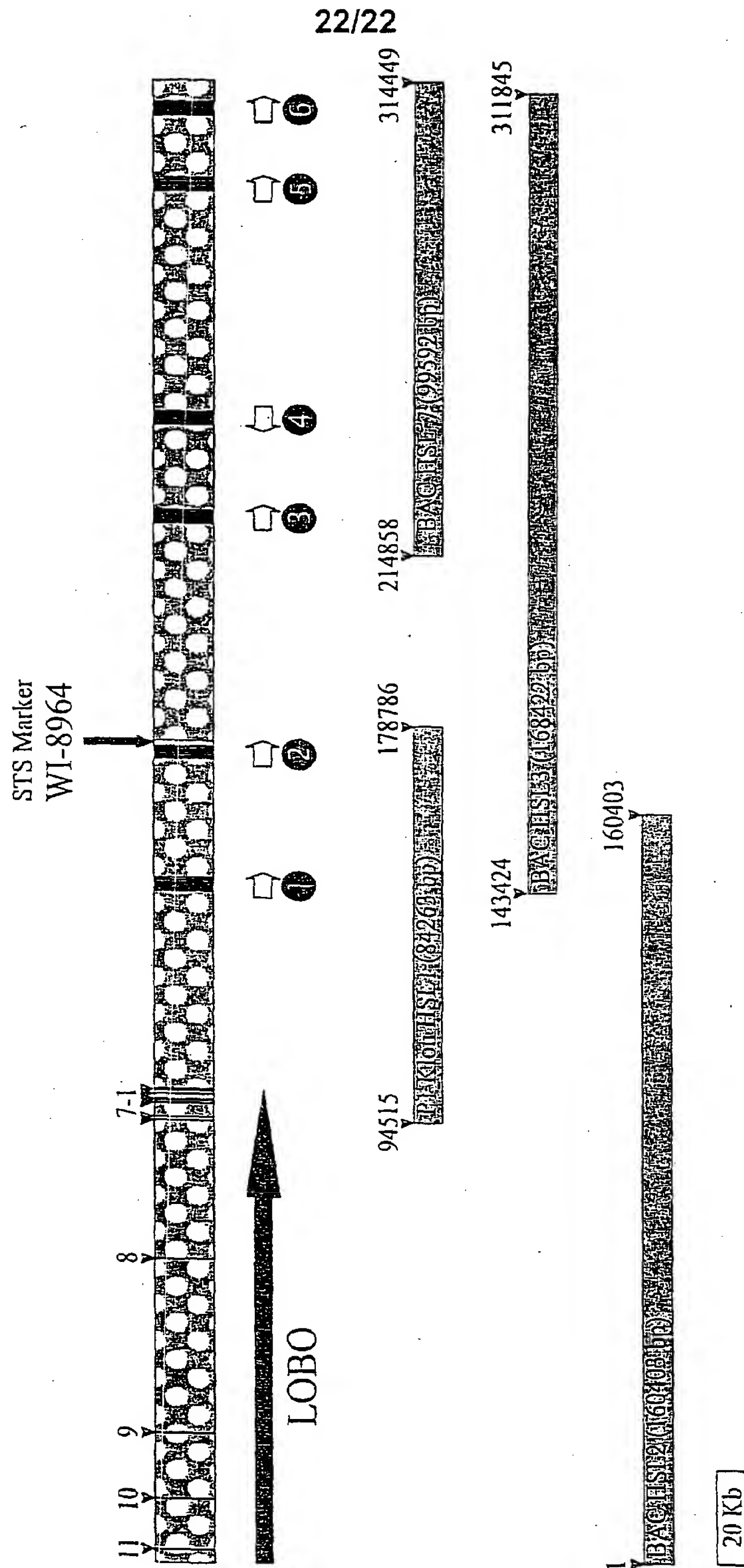


Fig. 10